UNIVERSITY OF NAIROBI

EFFECTS OF PEER ASSESSMENT ON ACADEMIC PERFORMANCE

CASE STUDY: THARAKA BOYS HIGH SCHOOL

NORAH KAREMA NYAGA

M.ED

(MEASUREMENT AND EVALUATION)

December, 2020

A RESEARCH SUBMITTED IN PARTIAL FULFILLMENT OF THE AWARD OF THE DEGREE OF MASTER OF EDUCATION IN MEASUREMENTS AND EVALUATION DEPARTMENT OF PSYCHOLOGY OF THE UNIVERSITY OF NAIROBI

DECLARATION

This research project is my original work and has never been presented for degree or any other award in any university.

Signature ………………………………… Date………………………

NORAH KAREMA NYAGA

E58/80044/2015

Supervisor

This research project has been submitted for examination with my approval as University Supervisor.

Signature ………………………………… Date………………………

DR. KAREN T. ODHIAMBO
EDUCATION PSYCHOLOGY_Measurement and Evaluation
DEPARTMENT OF PSYCHOLOGY
UNIVERSITY OF NAIROBI

DEDICATION

This study is dedicated to my family, my husband Daniel Muthuuri, my son Brenan Munene and daughter Anna favor Kathambi for their support, patience and love during my schooling period.

ACKNOWLEDGEMENT

ABSTRACT

Peer evaluation can be vital in building an active and autonomous student. This study sought to assess how often educators use peer evaluation in current Kenyan High School and decide how its effects on students' academic performance use four students from Tharaka Boys High School biology class as the case study. To attain this goal, the study adopted a mixed-method approach. Both qualitative and quantitative approaches were used to collect secondary school teachers in Tharaka Nithi County and form four students in Tharaka Boys High School. Research instruments were developed and distributed. An experimental procedure was also applied to four student's biology class at Tharaka Boys High School. Numerical data from the research instruments were sorted, organized, and entered in (Statistical Package for the Social Sciences) SPSS for analysis. Descriptive statistics were used to determine how frequently teachers used peer assessment and the types of peer assessment tools that were common. One Way Analysis of Variance was conducted to determine whether the application of peer assessment had any impact on student academic performance. A narrative analysis of the reflective journals was undertaken to assess the student's perception of peer assessment. The research showed that peer assessment was a commonly used classroom assessment tool among Tharaka Nithi County teachers. 89% of the teachers surveyed confirmed to have used this tool. However, a significant number of the sample population, 25%, stated that the peer assessment tool depended on the subject. Peer assessment had a significant impact on student academic performance. At [F-statistic value = 226.76405 P-value = 0 for peer assessment, and F-statistic value = 224.43889 P-value = 0], the result confirmed that the difference in means was significant to point to an improvement as a result of the application of peer assessment in the experiment. Narrative analysis established that students had a positive attitude towards peer assessment. The study concluded that peer assessment is a valuable assessment tool that can be effectively deployed to improve student performance.

ACRONYMS

EBC –   Evidence Based Curriculum

NACOSTI -   National Commission for Science, Technology & Innovation.

PA-   Peer Assessment

SPA-   Student Self-Assessment

SPSS -   Statistical Package for Social Sciences

LIST OF TABLES

LIST OF FIGURES

TABLE OF CONTENTS

CHAPTER ONE
INTRODUCTION

This chapter provides comprehensive background analysis and thereby contextualizing the study. The chapter is organized into study background, the study's proclamation of setback aims, research queries, the implication of the study, study validation, and the diverse vital works that will feature through the study.

1.1 Background of the Study

Peer evaluation is a procedure in which entities consider the extent of level, rate. Ambiguous, worth, value, or victory of the products or results of learning associates' similar position (Topping 1998, p 250). Definitions of peer evaluation have been relatively diverse, although assessors generally approve that peer-assessment comprises of one student's performance assessment or achievement of another student. For the appraiser, peer evaluation necessitates high-order intellectual skills, like comparing, differentiating, and conversing, enhancing consolidation and deepening the assessor's understanding of the issue. For the evaluated, peer comment relates to debated or conveyed measure can help learners progress the quality of their effort by associating their work to others. (Vickerman 2009, p 229) recommends that peer evaluation be used as a tactic for augmenting the diversity of educational experiences and supporting different students' learning to enhance peer evaluation practices, they should be programmed immediately after learning a new concept or, rather, before any skill mistakes are accustomed (Johnson, 2004).

Tutors use peer to boost learning: (1) to enhance student participation in the learning course (e.g., learners suppose teaching duties), (2) to improve group interactions and faith in others, (3) to ease individual response, and (4) to emphasis learners on the course instead of the product. Peer evaluation used as determinative assessments are more useful with class training and can improve learning and significantly impact learners' triumph (Johnson, 2004). Peer evaluation is largely familiar as a vital part of the seminal evaluation. Some specialists take peer-assessment to be a tactic on its own but mainly viewed to be harmonizing self-evaluation (Black, Harrison, Lee, Marshall & Wiliam, 2004).

The test then is to apply peer evaluation in ways that as several positive results are realized as possible while dodging the adverse ones and, simultaneously, bearing in mind the real (time) contemplations for both implementors and learners. One of the most stimulating proposed results of peer evaluation is the hint that learners can cultivate into free learners to measure their achievement and fiascos and who are less reliant on lecturers and teachers. (Race, 2001).

1.2 Statement of the Problem

Though research has been done and determined that peer-evaluation affects learners' performance, investigators suggested more work to elucidate the relative and enlightening aspects that restrain the efficacy of peer evaluation, to provide a starting point for further experimental work. Very few studies have been done in Kenya, and very few institutions have implemented it fully. Teachers continue being the custodians of the assessment process, determining the success of a student purely on summative assessment. The learner's worth would be enhanced through the formative assessment carried out in the classroom through peer-assessment. .

Metacognitive skills that allow a student to understand, master content, and become an autonomous learner fail to be developed during the time of the course or unit. Learners fail to take charge of their learning, and any success they get is attributed to either the teacher, the school, or parents. Because of the growing intricacy of the work area and expert tasks, current education gradually targets self-directed and collective learning (Boud, Cohen and Sampson 1999). Since self-engaged learning suggests that students are vigorously involved in determining their personal learning course, and collective learning suggest joint labors in doing tasks, parallel with these courtesies within the instructive atmosphere, the business community separate from the education system strains workers with advanced order rational skills, who are capable enough to contest in the progressively global world. Corporate and industry directors require their employees to think ingeniously, solve glitches, write well, work compliantly, and have social skills to be able to labor as a team. Those mandates call for unusual evaluation that enhances higher-order opinion expertise, rather than habit memorization and evocation of realistic knowledge, and peer evaluation fits these new goals.

1.3 Study Pur pose

The purpose of the study is to investigate impact of peer assessment on academic performance.

1.4 Objectives

a) To establish whether Peer assessment is a commonly used classroom assessment tool by teachers.

b) To determine the influence of peer evaluation on learner's educational performance.

c) To ascertain the opinion of peer assessment towards learners.

1.5 Research Questions

a) Do teachers commonly use peer assessment as a classroom assessment tool?

b) What could be the impact of peer assessment on learner's academic performance?

c) What could be the insight of students towards peer assessment?

1.6 Significance of the Study

This study purpose of giving evidence concerning the significance of applying peer evaluation on scholars learning; in an ideal learning situation, we would expect that teachers would denounce the assessment, especially during the instruction period, and give room for learners to assess their work. This would not mean that teachers are completely phased out of the assessment process, but they become a guide to instruct learners on how to carry out the exercise. This would pertain to them laying out the expectations of a given unit: what content is to be learned, assist learners in laying out their goals and learning strategies and make sure they have fully understood the needed rubrics for each criterion. Metacognitive skills that allow a student to understand, master content, and become an autonomous learner fail to be developed during the course or unit. Learners fail to take charge of their own learning, and any success they get is attributed to either the teacher or the school or parents. Evaluation, being a vital component in the learning process, should hence be diversified Teachers should relinquish authority in the assessment and share the process with the learners as it becomes more elaborate and beneficial to the learner. Teachers should be conversant with the techniques' needs for peer assessment and have the confidence to apply them in their classrooms. With well-structured instructions on how to carry out peer assessments, students will, in time, master the techniques and use them throughout their learning. It is paramount then to want

and introduce these skills that go beyond the end of the course or unit exams to learners to achieve autonomous, independent learners.

1.7 Justification of the Study

Partial study indication exists of the impacts of applying peer-assessment as a classroom evaluation tactic. Specific disciplines where the concert is clear (like physical teaching or the arts) have labeled the worth of peer-evaluation. Butler and Hodge (2001), researching the impacts of peer evaluation in high school bodily teaching, realized that peer evaluation had real applications and worth for learners. Their research's outcomes stressed the value of both responses in peer evaluation and in cultivating trust among peer evaluators.

This research will offer evidence concerning the significance of applying peer evaluation on learner's education. Because assessment has been limited to the teacher being the custodian of the exercise, this study will allow sharing of the task to bring about higher-order thinking skills among students. The study's outcome will offer esteemed information to upcoming plan makers, scholars, and tutors who will deliberate applying peer evaluation to their learners.

2.0 Introduction

This chapter evaluates writings on peer evaluation, its role in performance, the relevant theoretical basis of the theme, and underpinning empirical studies. A conceptual framework will also be developed. In this chapter, peer evaluation and its relationship to academic achievement will be discussed. The first section provides a review of related literature. Section two focuses on peer evaluation concepts, components, elements, practice, application, theoretical basis, conceptual and hypothetical framework.

2.1 Related Studies

Kit S. Doule, Joshua A. Mc Grane, and Theresa N. Hopfenbeck studied the effect of peer evaluation on academic achievements. The aim was to identify peer evaluation impediments on academic achievement. To find out the features that control the efficiency of peer evaluation. Their discoveries provided a base for utilizing each review as a formative procedure for advancing academic goals. The outcomes showed that peer evaluation was more successful than no thought, but then further findings were required to provide precision on aspects that regulate peer evaluation's usefulness.

Brian Noonan and C Randy Duncan carried out a study on peer and self-evaluation in high schools. Their objectives were: To determine the role of teachers in peer evaluation. To determine the teachers' responsibility for the classroom environment. The aim of their research was to investigate how often secondary school educators make use of peer evaluation as well as self-evaluation. Their findings indicated that most educators found peer-evaluation and self-evaluation helpful and can be used in a classroom setup. Nevertheless, additional study was required to steer through the extensive usage of these evaluation tactics. This study was carried out by MarjoVan Zundert, Dominique Sluijsmans and Jeroen Van Merrienboer to investigate the effective peer evaluation processes, the aim of the research was to examine the correlation in regards to peer evaluation variables, their goals were: to create an explicit proficiency advantages from peer evaluation centered review, to develop peer evaluation prowess merits from practice that connects to learners

reasoning techniques and academic achievements, to determine learners standpoints with regard to peer evaluation that are clearly affected by experience and training. They concluded that the psychometric qualities of peer evaluation appeared to be adequate and peer evaluation was observed to have affirmative impact on domain specific proficiency, peer evaluation proficiency, and learners' standpoint concerning peer evaluation. However, they suggested further research work on peer evaluation to provide a starting point for additional experimental work.

A study was carried out by Jen D. Snowball and Marcus Mostert on formative peer evaluation and academic performance to determine which suitable academic achievement to carry out peer evaluation, the nature of the response, and conditions in which learners reply. In assessing the effect of peer evaluation on 50 essays that they sampled, they noted that correct evaluation and comments were provided in technical groups instead of on many subject matters. Peer scores appeared to be clustered in the 60% to 69% scope, which would have disheartened learners whose essays would have scored less from making recommended modifications.

Regression analysis pointed out that peer evaluation involvement presented no effect on essay scores, validating that the impact of peer evaluation may only be evident as time progress. Therefore, it was advocated that formative peer evaluation should not involve giving a score, but alternatively assist learners in providing an extra response on essential subject matters and replying to such response.

2.2 Concept of Peer Assessment

The most thrilling suggested findings of peer-evaluation and self-evaluation are the knowledge that learners can advance into autonomous learners, weigh their victory and shortcomings, and learners who need little or no assistance from educators (Race, 2001). Hanrahan and Isaacs (2001, p. 65) discovered that even the learners who felt that they had not added value to the excellence of the assignment they have handed in for peer evaluation noted the advantages of viewing their work in the circumstance of others assignments. "Given the isolation of some students in diverse modular degree courses, peer evaluation may be the only opportunity they have to see the work of other students." Besides, learners experienced understanding with evaluators, valuing how hard it is to evaluate. Hanrahan and Isaacs (ibid.) claimed that this is a crucial feature in aiding learners to become "independent agents in the

community" and independent students. While scripting on formative group peer evaluation, Pope (2001) settles that raising the learners' self-reliance can be from evaluation provided that it is executed prudently.

Debatably, assessing has more prospective for heightening learning as it necessitates the learner as an evaluator to assess, that is, to build "the capability to approximate the relevance of a specified item corresponding to certain condition" (Pritchett, 1999, p. 33). On behalf of the maximum level of understanding and logical reasoning acknowledged by Bloom (1956) in his renowned classification, evaluation encompasses an excellent level of reasoning proficiency such as relating, opposing, and expressing, altogether can aid in expanding the evaluators' knowledge of the subject. It can also be claimed that by evaluating other learners' compositions, learners continuously participate in likening their tasks to that of their colleagues whose assignments they are assessing. This type of self-evaluation can advance to correct self-evaluations. This will then reduce collective mistakes (Topping, 1998). Peer evaluation benefits involve that learners view various ways of approaching the work, including making multiple postulations, beliefs, and kinds of writing. Teachers' time used on assessing tasks can be minimized.

Even though peer evaluation in big classrooms seems to provide a variety of instruction and institutional benefits, possible shortcomings should be carefully deliberated. How its execution will take place, self-evaluation, and peer evaluation methods are more time-consuming than traditional approaches to both the learners and the educators (Hanrahan & Isaacs, 2001). Sometimes, learners who are demotivated to take part will not profit (Smyth, 2004). Also, inspired learners may experience challenges in work given.

2.3 Components and Elements of Peer Assessment

In peer evaluation, teamwork learning tactics, learners assess their peers' tasks and are also evaluated by peers. Peer evaluation responds to the learner on their work's value, mostly with beliefs and tactics for advancement. Peer assessment can give the teacher the required material on learner's achievements when used in the review. It could also permit assignment where imaginative learner tasks could not be marked well by the training team. Peer evaluation strategies differ significantly and are mostly well comprehended through illustration to present an accurate response to other students. Learners require distinct directions, training on evaluation standards, and grasping instructions via working with models. Before learners are prepared to respond to

others, their assessment should be likened to teacher assessment of similar quality assurance instances. Peer evaluation can take various methods ranging from formative intentions. Peer evaluation is a robust Metacognitive approach. It provides learners' interactions in the learning procedure and builds the learners' ability to think through and decisively assess their learning and other skills and facilitate comprehension within the field of information and knowledge (Dr. Louise Lutze Mann School of Biotechnology and Biomolecular Sciences).

2.4 Practice and Application of Peer Assessment

Dr. Arianne Rourke, COFA, explains how peer evaluation should be carried out. Teach the learner how to perform peer evaluation, then allow them to perfect, provide a criterion that they can use to illustrate the procedure on how to award scores. Please provide them with low, average, and good work to see how it looks and give the trial stages to get to the goal. Give them recommended web addresses to websites. Break the Evaluation into convenient pieces to slowly move towards it and create it up, and don't feel overpowered by the process. If the educator thinks that the learners are ready, they start reviewing each other's work.

2.5 Peer Assessment and students evaluation

Peer evaluation can advance mutuality and teamwork among learners, inspire the joy of learning, and escalate time on work assignments (Chickering & Gamson, 1987) operated on formative evaluation rather than summative evaluation; peer evaluation is a writing method which is set in the corrective dialogue (Lupton, 2008)

Peer-assessment has also been described as a tactic linking students' choices regarding others' work that would habitually ensue when they work together on joint projects or learning events. Peer evaluation is usually intended as influential evaluation initially in the learning course (Johnson, 2004; Hanrahan and Isaacs (2001, p. 65). It is discovered that even learners who professed not to have developed the work's excellence succumbed for peer evaluation acclaimed the paybacks of seeing their work in the context of others. "Given the segregation of particular learners in various modular degree courses, peer evaluation may be the solitary chance they have to view the work of other learners.". Secondly, learners developed compassion with evaluators, acknowledging the difficulty in assessing work dependably and justly. Hanrahan and Isaacs (ibid.) claim that it is

paramount to assist learners in becoming "liberated mediators in the public" and independent life-long students. Inscription about determinative group peer evaluation, Pope (2001) admits that improving student assurance and individuality can result from peer evaluation if instigated carefully.

2.6 Theoretical Basis of Peer Assessment

Flavell (1976) was the first researcher to use the term in educational and cognitive psychology, and he used it to describe an individual's cognizance of thinking and learning. He defined Metacognition as a dynamic exploratory and subsequent guideline and organization of these processes about the reasoning data they have, usually in the thought of some rock-solid objectives or Metacognition. Metacognitive awareness constitutes a part of thinking skills to retain and develop continuously. Flavel (1976) describes Metacognition as thinking about your thinking and understanding regarding an individual's cognitive procedure. Metacognition will be beneficial as it gives a guiding map of a process, from knowing how and what to learn to evaluate how much has been achieved in the learning process. It includes an essential consciousness of one's reasoning and knowledge as a thinker and a learner. Though earlier used to study children's development, researchers have over the years focused on how experts display metacognitive thinking and have been interested in how these reasoned activities can be trained to novice to advance learning goals. Metacognitive exercises have been known to escalate students' skills to acclimatize their education to new contexts and work (Bransford, Brown and Cocking pg.12) by attaining a cognizance level over and above the area under discussion. They are also able to reason about the work and perspectives of various studying circumstances. Pintrich (2002) affirms that learners who recognize different studying tactics, reasoning, and problem solutions tend to use them (pg. 222).

Zohar and David (2009) are emphatic that there must be an awake meta- the tactical level of advanced instruction reasoning (pg. 179). Learners who are conversant with metacognitive practices are conscious of their gifts and flaws. This is a crucial component in identifying the threshold of an individual's expertise or experience and mapping how to extend it. Most importantly, students fully conscious of the muscles and limitations in their studies and are expected to "aggressively observe their study habits and evaluate their willingness to perform a certain work achievement. (Branson, Brown, and Cocking, p. 67). Research by Dunning, Johnson,

Ehrlinger, and Kruger implies that improved metacognitive capacities – to study certain proficiencies, identify them, and rehearsal they are required in many circumstances. Learners will then have a mapped learning strategy as they will set specific goals on the individual skill they want to learn. Metacognition has been known to be a factor that helps learners have self – controlled study. A self-controlled study is an effective, productive procedure where students decide objectives for their studies and then tries to review, control, and synchronize their reasoning inspiration and conduct directed and limited by their objectives and the circumstantial aspects in the environment. (Pintrich 2006p453). It is expected that since interests and significance form a positive relationship to observations of competences, learners are expected to make objectives and each other's and their studying process. Metacognition has been a significant forecaster of achievement: learners are capable of distinguishing facts they know and do not know and are likely to review and retain new knowledge. (Dunning, Johnson, Ehrlinger. and Kruger, 2003). Though aware of metacognitive tactics, it is vital to include self–regulation aspects that will help one assess their work hence further their learning.

Understanding of reasoning signifies what one comprehends about their cognition. It generally involves three types of metacognitive consciousness: assertive, procedural, and conditional (Brown, 1987; Jacobs and Paris, 1987). Strong understanding is identifying "concerning" entities. Procedural experience means to experience "how" to perform things. Conditional insight is realizing the "why" and "when" features of reasoning. It can be understood as a robust understanding of the comparative value of the reasoning process.

2.7 The Socio Cultural Situated and Activity Theories of Learning
William James, John Dewey, George Herbert, Levy Vygotsky, and Jerome Brunner are among those who developed these theories. These theories are established on the fact that studying is situated in the social environment. The following are the tenets of these theories. Learning takes place due to collaboration among the persons and the social environment. Meaning that thinking is carried out by actions that change the situation, and the situation changes the thinking, i.e., thinking and the position frequently interact.

These theories perceive learning as a negotiated exercise where educational artifacts like language, equipment, and books play a crucial role. Learning is also perceived to be a social and collaborative process where students develop their thinking together. Salomon (1993) argues that education entails participation, and the content learned is not from a teacher but mutual within the social clique. Here, the cumulative knowledge of the organization, community, or group is importantly prioritized compared to individuals' cumulative experience.

These theories stress the engaged participation of the learners' inappropriate ways of perceiving the world in a given course and acting. Knowledge is not abstracted from context but perceived concerning the context. Knowledge is extracted from practice. The teacher's place is to build conditions where learners can be excited to act and think in authentic activities above their competency levels but within their zones of proximal development. The learners, according to the theories, should participate in the creation of the problem and solutions. Teachers and students should jointly solve the problem and develop skills and understanding. Learning is deduced from agile engagement in actual tasks. Biggs and Tang (1997) argue that judgment on education needs to be holistic to be consistent with the social-cultural or situated approach. They add that if the primary goal of learning is to build learning identities, students' Evaluation should be central.

2.8 Self-regulated learning theory.

Zimmerman (1998) defines self-controlled as "the self-instruction procedure where learners convert their intellectual capabilities into academic talents. Studying is seen as an action that learners do on their own in a positive manner instead of as a secret happening to them in response to teaching. (p 2). Self – guideline is vital to the studying procedure (Jarvela and Jarvenoja, 2011: Zimmerman, 2008). It can benefit learners in creating healthier studying behaviors and reinforce their learning abilities (Wolters2011), applying to study tactics to improve academic results (Harris et al., 2005), and evaluate their educational process (De Bruin, Thiede and Camp 2011). (Pintrich and Zusho, 2002, 2000) describe the self-guided procedure in three stages. The consideration stage (previous to the learning effort), The performance stage (in the course of the learning), and the self-reflection step (after the learning effort) (p4).

Self-guideline is not an intellectual capability or an academic achievement, but it refers to the self-regulatory procedure where students convert their intellectual skills into academic proficiencies. Self-guideline is not a trajectory that specific learners have, and others don't. Still, it encompasses the careful usage of particular procedures that necessitates individuals becoming acclimated to every studying work. It involves identifying objectives, choosing plans to achieve those objectives, observing development, reorganization if the goals were not completed, using time appropriately, self-assessment the approaches picked and acclimating forthcoming methods regarding overtime. Students have to trust that they can do any work given to them. They need to be inspired. Learners can now self or peer assess their strategies. In the self- reflection stage, learners make self-view and model beliefs about the reasons for their accomplishment (Zimmerman, 1989 p,5). Teachers in a classroom will use this observation from Zimmerman to influence learner's ability to self-regulate. Self-regulation will ensure that learners will be motivated, and this will result in an impact on academic outcomes. As investigators are changing to self-evaluation as a means of channeling self-reflection to advance learners studying, they have defined self-evaluation or self-evaluation as a judgment of individual's' tasks founded on indication and clear standards, for the target of refining upcoming achievements (McMillan and Hearn, 2008)p 40.

The outcome of their performance. (Graham and Haris 2000, Kistener, Rakoczy and Otto 2010) agree that SRL can cause difference between academic achievement and flop for many learners. Monitoring one's learning strategies so that they align with the set goal is essential. To develop tactical students, learners should take possession of their studying and success results (Kristner et al., 2010). Having taken the responsibility of their learning process, students who become self-guided and can assess their tasks, autonomous of educators- delivered summative Evaluation (Winnie and Hadwin, 1998).

To achieve this level of autonomy, a learner can rely on the four components of self-regulation as they are described by Baumeister et al. (2007). The first is the desired behavior standards; a student will have to sit and write down what they would like to accomplish at the end of the education process. They could do a hierarchical goal plan, that is, set the desired behavior to achieve at the end of a topic, a chapter, a lesson, all the way to the end of a course. This will give the student the advantage of knowing what stage they failed to achieve and how to correct this as they move

forward to the next level. The second component is the motivation to meet the desired standards. Every learner is unique; each learner has to know what moves them to achieve. A motivated learner is far much better at meeting their desired goals than a less motivated one. The third component is the monitoring of situations and thoughts that precede breaking standards. It is impossible to divorce peer evaluation and monitoring of one's work. A learner will require to do an audit and a regular one into the investment of his learning. This assists in appreciating how much has been done and what extent and further adjustments to improve on the process. The final component is willpower—inner strength to control urges. Peer evaluation needs one to constrain themselves to the given behavior of setting the desired goals and work without deviation until one gets the desired action. An autonomous learner is known for locking out all distractions and focusing on the learning process without being supervised. According to Bandura, a learner will have the function of self-regulation that contains self-observation, which involves an individual assessing his thoughts and feelings aiming at informing and motivating the individual to work towards goal setting and be influenced by behavioral changes

2.8.1 Cognitive constructivism theory

This theory is a canopy phrase for a presenter of associated epistemological and emotional philosophies about the quality of information and how it is designed through an apprehender's intellectual (hence reasoning) capability. Cognitive constructivist concepts presume that intelligence is created by the brain instead of obtained from a place. In this interpretation, understanding is not conveyed all of a piece with significance enclosed, nor accumulated bit by bit and then reconstructed. Instead, knowledge is believed to be built, or keenly organized, by an apprehender's intellectual procedures even as specific intentions and circumstantial restrictions direct the outcome.

The cognitivist theory believes that students actively build understanding regarding their dominant reasoning forms. They argue that knowledge constructed by learners makes important indications to reasoning structures. Performance includes active techniques of deliberate intellectual depictions resulting from past studying understandings. A student thus aggressively creates acquaintance rather than inactively grasping it rendering learning as a process of the responsibility of the teacher then seizes to be the training of information but to assist finding by providing the

required materials and supervising students as they try to conform new comprehension to the last one and to amend the previous knowledge to acclimate the recent Evaluation of the learners prior experience should guide the teacher on how to design a lesson to determine the point to start for the instructions for each class or concept. Cognitive theory appreciates the learner's previous knowledge triggering intrinsic motivation as the learner is not viewed as a tabularize. Since it encompasses significant rearrangement of the prevailing reasoning configurations, fruitful studying needs a key individual venture on the student's side (Perry, 1999, 54).

Learners will have to attempt what they know at that moment, what they wish to learn, and how they want to learn. The peer-evaluation exercise will help the learner face their limitation of the current facts and admit the need to adapt present principles. Cognitivism allows for the assimilation of firsthand facts to general understanding and allowing students to make suitable adjustments to their current situation to contain that knowledge. Cognitivism will acknowledge the use of talents and practices, but they use better significance on tactics that aid learners in adapting to recent facts aggressively. Cognitivism, like A. L. Brown and J. D. Ferrara, think that since studying is significantly self − driven in the cognitivist structure, they have recommended approaches that need learners to observe their studying process. Cognitivism believes that Evaluation can be made to develop knowledge through reflection and repetition. Learning is more promising when a learner has more significant interpretation and gratefulness of the innovative, propagative procedure of studying when conscious of educational prospects and agreement on how to assess and criticize their tasks accurately. To achieve this, the learner must, therefore, through the help of an instructor, recognize from the beginning the standards by which their jobs will be evaluated. They must record their task procedure for the period of the program.

With performance and response, learners will comprehend the problematic type of assessing and enlightening their tasks. Cognitivism believes we are makers of our comprehension. To do so, we have to question, explore, and determine what we know. A learner must be encouraged to use active techniques in the classroom. (Investigates, real-world problem solving) to invent extra understanding, reflect on it, discuss what they are undertaking and how their comprehension is transforming. Cognitivist educators will inspire learners to evaluate how the action is assisting in acquiring awareness continuously. Students in a cognitivist class are considered expert learners

because they question themselves and their strategies. They become autonomous learners as they get an ever-broadening tool to keep learning and are intrinsically motivated. Learners transform from passive recipients of facts to a dynamic member in the studying process. Through the guidance of an instructor, learners will build their understanding dynamically instead of automatically absorbing experience from an educator or schoolbook to reproduce it.

A class is viewed not as a residence for the skillful to dispense out understanding of inactive learners, but one where learners must be dynamically participating in their studying process. The instructors will facilitate the learning process by training, bridging the gap, urging, and assisting them in advancing and evaluating their comprehension, thus their studying process. An educator will ask questions, then direct learners to finding their solutions. The teaching process will involve many techniques, such as inquiry, multiple intelligence, and collaborative learning. In the cognitivist approach, Evaluation needs to gauge a learner's achievement in the three key studying results of this theory, conceptual comprehension, skills to perfume a survey, and understanding about the survey. The cognitivism method of Evaluation is formative instead of summative. Its objective is to better the excellence of learners' studies and not provide signs for assessing students. Evaluation, then being an ongoing process, will be done as learning continues as it is context-specific. Feedback given to teachers from students about their education will help the teacher bridge the gap by responding to the outcomes, offering suggestions on how knowledge will be improved.

Educators who would like to use constructivism in their training ways realize a considerable task since they don't recognize what transpires in their learner's mind – they should train how to create frameworks of abstract forms, which will be worked on by their learners. This can undeniably be realized in many techniques, but it is crucial to implement a well-deemed-out plan to activate learners knowledgeably. This objective can also be achieved by presenting a learner's problem, thereby bringing up a reasoning discord and uncovering learners' understanding. The absence of consistency in learners' opinions or inconsistencies between their views and logical agreement is a big chance to evaluate learners' understanding and in result – to make them try to build a prototype designed to elucidating the matter. The final phase of learners' tasks is refining the skill to confirm their previous prototype and re-familiarize their view about the (experiential) truth. The

constructivist prototype of education is undoubtedly a problem, but it should not be a problem for a ready educator (who comprehends the spirit of constructivism). The most crucial stage for modifying the educational system recognizes that learning is a physical process that coordinates our knowledge of the world.

2.8.2 Conceptual Framework

A theoretical framework is an organized set of ideas about how a particular occurrence function or is associated with its parts (Burns and Burns, 2012). It is a graphic flowchart design explaining the relationship between factors and variables acknowledged relevant to the study (Punch, 2006). Peer assessment is a process independent variable; it will influence the performance of the respondents.

Figure 2.8.2.1 Conceptual Framework

Dependent variable	Independent variable	Intervening variable	Impact/learning outcome
-Peer assessment as an alternative authentic assessment → -Techniques of peer assessment	-Peer assessment a commonly used classroom assessment tool by teachers → -Influence of peer evaluation on leaner's educational performance -Ascertain opinion of peer assessment towards learners	-Teacher's competences in pedagogy → -Learning cognitive capacities -socio-economic status of learner	-Autonomous independent learner -Better pedagogical practices -Better performance -Reflective learning -Value discourse -Higher order thinking

CHAPTER THREE:

RESEARCH METHODOLOGY

3.0 Introduction

This chapter provides a comprehensive report of the method used to answer the research question. The chapter is organized in the various processes that will lead to collecting data from the target population bringing. The chapter will also inspect the data gathering approaches, research tools, legitimacy and dependability, and data examination methods.

3.1 Research Design

This study adopted the mixed methods in which both qualitative and quantitative data was being collected. The rationale for choosing mixed methods is because this particular research design is best suited to assess how peer evaluation affects academic performance while providing a solution to common problems in the classroom environment. Moreover, the method is known to acts as a means of professional development.

3.2 Population of Interest

This research's target population was secondary school teachers from Tharaka Nithi County and formed four students at Tharaka Boys High School. Data from the country Education and Literacy page, there are approximately 111 secondary schools. The estimated number of teachers in these schools is 2500.

3.3 Sampling Procedure

The study utilized both purposive and convenient sampling to select qualified representatives to partake in the research. The school that participated in the survey was purposively nominated, and the distribution of the research instrument was done at the researcher's convenience.

3.4 Sample Size

To determine the sample size, an online survey tool, surveysystems.com, was utilized. At 95% confidence level and 5% confidence interval, the required sample size is 333 teachers from 89 teachers. All form four student biology class at Tharaka boys high school participated in the study.

Table 3.4.1: Sampled Population

Sampled Population	2500 teachers 30 students, 111 seocndary schools
Target population	2500 Teacher and 30 Students, 111 secondary schools
Sample size	333 Teachers and 30 Students and 89 secondary schools

3.5 Data collection instruments and Procedure

This study utilized two types of self-administered questionnaires. The first questionnaire sought to capture data from the teachers. This questionnaire was organized into two sections. Section 1 captured biodata from the teachers, while the second section captured data on peer evaluation within a secondary school setting. The second questionnaire answered the second and third questions. This questionnaire was organized into student perception about peer assessment and reflective journal [appendix 1].

Table 3.5.1: Procedure for answering the research question

Objective	Data Collecting Instrument	Approach
1. To establish whether Peer assessment is a commonly used classroom assessment tool by teachers.	Personal data questionnaire (PDQ)	Quantitative
1. To determine the impact of peer assessment on student academic performance. .	Personal data questionnaire (PDQ)	Qualitative/quantitative
1. To determine the perception of peer assessment towards students.	Reflective journal	Qualitative

3.6 Piloting/ Validity and Reliability

No piloting was done for this study since the researcher adopted the questionnaire by Stuchlikova et al. (2018). How true the research instrument had already been reported by Stuchlikova et al. (2018). [permission found in appendix 2]

3.7 Research Procedure

This study was undertaken in two phases that were carried out simultaneously. The first phase involved distributing teacher questionnaires to the various secondary schools conveniently chosen by the researcher. The research adopted a drop-and-pick data collection approach. In consultation with the relevant authorities, the questionnaires were dropped at each school's deputy principal office, which was then distributed to the teacher for a response.

The second stage involved a pretest and posttest intervention procedure for the learners. A pretest self-administered interview was carried out to measure student's knowledge and existing animal classification. After the pretest, the researcher revisited animal classification with the student and administered a one-hour test on the subject under investigation. Learners were prevented from writing their names in the research questions; only codes were used to identify them. These codes were developed by the researcher and randomly selected by the students before the test. Once finalized, the learners were requested to submit their completed copies to the researcher. The researcher then made copies of the answered tests and graded the original documents for the tests.

The following day, a one-hour biology lesson was allocated for the actual peer assessment. Before this assessment, each student was given a rubric sheet. The researcher reviewed the rubric with the students and later distributed copies of completed tasks randomly to them. The student graded and commented on the documents of completed tests. The assessors were barred from writing their names on the assessed copies. The marked copies were submitted back to the researcher during the next mathematics lesson. The research administered another test for the student on the same animal classification concepts in biology as tested before. Students went through the same process as completed in the first task. The researcher made copies, the grading rubric was submitted to the students, and copies of the second test randomly assigned to students for grading. Graded manuscripts were resubmitted to the research. The students were asked to writing a reflective journal detailing their experience of the entire process [tests and rubrics in appendix 3].

3.8 Data Analysis

Once the research instruments were obtained, the data was cleaned, organized, and recorded into Statistical Package for Social Sciences (SPSS) version 25 [sample raw data is in appendix 4]. To give a response to the study questions, several data analysis approaches were utilized. First, illustrative measurements were used to determine the use of peer assessment in secondary schools. To examine whether peer assessment impacts student performance, a One-Way Analysis of Variance (ANOVA) test was carried out. Qualitative approaches were used to examine learners' perceptions of peer evaluation.

3.8.1 Ethical consideration

The research secured authorization to conduct the study from the University Department. NACOSTI approved the research [refer to appendix 3]. During data gathering, the researcher wrote a signed consent signed by participating teachers and students confirming voluntary participation in the study. The support later explained the survey's purpose and made assurances that no personally identifiable data would be used in the final analysis [appendix 2].

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter documents the results of the study. The chapter is organized into demographic characteristics of the sampled population, the frequency of using peer assessment among teachers in secondary schools, peer evaluation on learners' academic excellence, and learners' perception towards peer assessment.

4.2 Demographic Characteristics of the Sampled Population

All 400 questionnaires were issued to the selected schools. Out of this, 50 were either incomplete, not respond to, or obsolete. Three hundred fifty questionnaires were completed correctly, representing a 100% success rate. The demographic attributes of the test data are indicated below.

Table 4.2.1: Demographic Attributes of the Sampled Population

Variable	Character	Percentage
N		350
Gender	Male	53.05
	Female	46.95
Age	20 – 29 years	14.50
	30 – 39 years	49.24
	40 – 49 years	26.72
	Above 49 years	9.54
Academic qualifications	Diploma in Education	24.81
	Post graduate diploma	6.49
	Bachelor of education degree	64.12
	Masters of education degree	2.67
	Other qualifications	1.91
Hours per week	Below 12 hours	35.82
	13 – 19 hours	42.28
	20- 29 hours	17.27
	30 or more hours	4.63
Class size	Below 20	1.43
	20 – 40	2.06
	41 – 60	64.26
	60 and above	32.25
Teaching experience	Less than 1 year	3.01
	1 – 5 years	21.93
	5.1 – 10 years	23.44
	Above 10 years	51.62

The participant's biodata's descriptive analysis indicates that there were more male teachers, 53.05 %, compared to females, 46.95. Most teachers are under 40 (14.50% 20-29 and 49.24% 30-40); teachers between 40-49 years accounted for 26.72%, while those above the age of 50 accounted for 9.54%. Many educators had a bachelor's degree as their minimum qualification was 64.12%, 24.81% were diploma graduates, 6.49% were postgraduate diploma holders, while 2.67% were master graduates. Many educators taught between under 20 hours per week (below 12 hours, 35.82, and 12-19 hrs—42.28%.42.28 %. A significant majority of teachers taught more than 40 students, 41 − 60= 64.26%, and above 60 = 32.25%. The majority of the teachers had more than ten years of experience. 23.44% had experience spanning between 5.1 − 6 years of experience. 21.93% of the teachers had between 1.1 to 5 years of experience, while 3.01% had experience spanning for less than a year.

4.3 The Frequency of peer assessment Use as a classroom assessment tool in secondary schools.

To determine whether peer assessment was a frequently used assessment tool in the secondary schools, teachers were asked to state whether they used peer assessment during practice and which approach to peer assessment was used. The outcomes shown in figure 1 below shows that peer assessment is a commonly used classroom assessment tool in secondary school. 89% of the sampled population agreed to use peer assessment as a classroom assessment tool, while 11% did not. Peer grading was the most commonly used type of peer assessment tool at 50%. However, a significant number of the sample population, 25%, stated that the peer assessment tool depended on the subject. This indicated that 25% of the teachers juggled peer grading, formative feedback, and peer assessment of group work participation. Formative assessment was Figure 1: Use of Peer evaluation as a schoolroom evaluation tool. Least used type of peer assessment 10%.

In terms of frequency of use, the respondents were asked to indicate a scale of 1-5 (Never – Very Often) how often they used peer assessment as a classroom assessment tool within one month. A graphical representation of the results of descriptive statistics is shown in Figure 2. Formative feedback as a classroom assessment tool had a negative skew as captured by the area plot. This fact is confirmed by the descriptive statistic table, which indicated that 38% never used this type of peer assessment, 18% rarely used it, and 20% remained neutral on its use. Only a cumulative 14% of the sampled population used this tool. A mean of 2.4 confirmed that the tool received a

below-average rating. Peer grading was the most utilized tool with a mean of 4.8 and an area plot distribution between often and very often. 92% of the total population utilized this tool (10% often, 82% very often). Peer assessment of group work participation use oscillated between rarely at 48% and usually at 40%, a mean of 3.2 indicated that this tool had an above-average service. When asked how often they use peer assessment as a classroom assessment tool within a one month's teaching period, 35% indicated they often used the tool, 47% use the tool very often, while 14% used it rarely. However, a mean of 4.6 and the distribution of use in the plot area confirmed that peer assessment was a commonly used classroom assessment tool during teaching practice.

Figure 4.3.1: use of peer evaluation as a school room evaluation tool
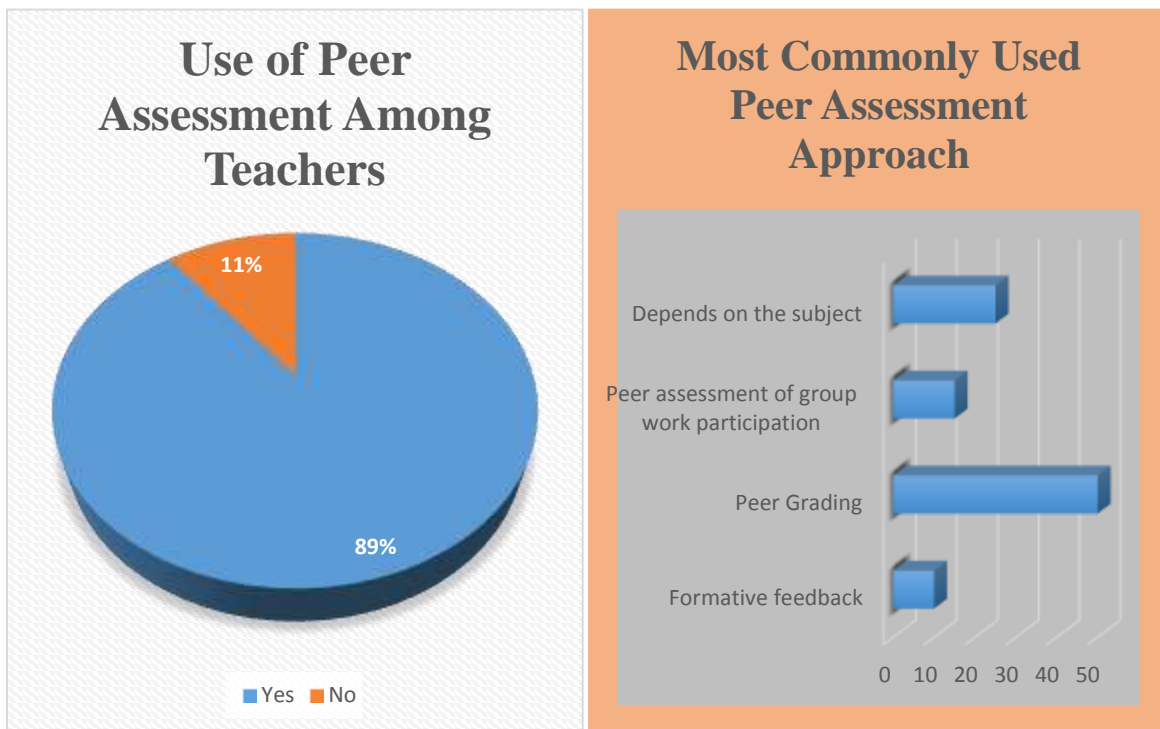
Figure 4.3.1: Monthly Distribution of Peer Assessment Use

	N					350
Items	**Scale**					
Measure	Never	Rarely	Neutral	Often	Very often	Mean
Frequency of using formative feedback	38%	18%	20%	10%	4%	2.4
Frequency of using peer grading	0.5%	7%	0.5%	10%	82%	4.8
Frequency of using Peer assessment of group work participation	2%	48%	5%	40%	5%	3.2
How often do you use peer assessment in your teaching practice?	0.5%	14%	3.5%	35%	47%	4.6

Monthly Distribution of Using Peer Assessment as a Classroom Assessment Tool
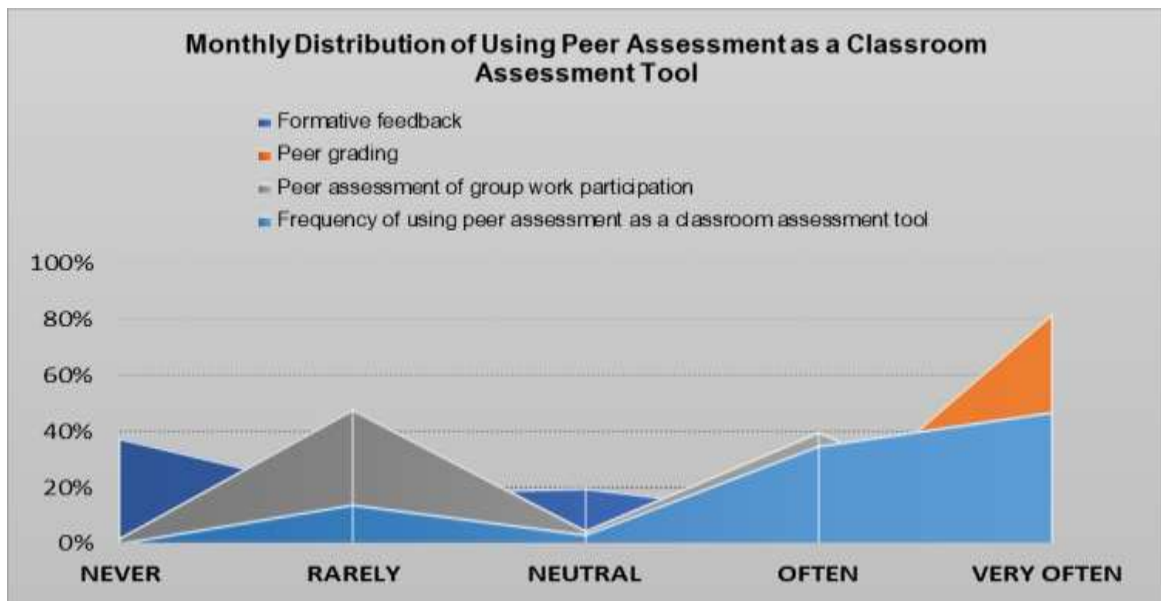
4.4 The effect of Peer Evaluation on Learners Academic Excellence

To establish whether peer evaluation impacted the results recorded after the experiment, a comparison was made between the outcome for tests 1 and 2 on student peer assessment and tutor assessment results on tests 1 and 2. Further, a one-way analysis of variance was conducted.

Table 2.4.1: Comparison of Means for Peer Assessment

Summary of data

Groups	N	Mean	Std. Dev.	Std. Error
Group 1	30	11.6667	1.647	0.3007
Group 2	30	17.2	1.1567	0.2112

Table 4.4.2: Comparison of Means for Teacher Assessment

Data Summary

Groups	N	Mean	Std. Dev.	Std. Error
Group 1	30	11.4	1.4288	0.2609
Group 2	30	17.4667	1.6965	0.3097

A comparison of means for both peer and tutor assessment for the first and second tests indicates a significant improvement of the mean scores [from 11.67 to 17.2 for peer assessment and 11.4 to 17.47 for Teacher Assessment]. Since there was an apparent improvement in performance from both scores, whether these improvements were significant to justify the conclusion that peer evaluation holds a substantial effect on learner academic excellence. Further analysis was conducted, as shown below.

Table 4.4.3: One Way Analysis of Variance for Peer Assessment

Analysis of Variance Results

F-statistic value = 226.76405

P-value = 0

⊞

ANOVA Summary

Source	Degrees of Freedom DF	Sum of Squares SS	Mean Square MS	F-Stat	P-Value
Between Groups	1	459.2611	459.2611	226.764	0
Within Groups	58	117.4664	2.0253		
Total:	59	576.7275			

☐

Table 4.4.4: One Way Analysis of Variance for Tutor Assessment

Analysis of Variance Results

F-statistic value = 224.43889

P-value = 0

ANOVA Summary					
Source	Degrees of Freedom DF	Sum of Squares SS	Mean Square MS	F-Stat	P-Value
Between Groups	1	552.0727	552.0727	224.4389	0
Within Groups	58	142.6679	2.4598		
Total:	59	694.7406			

The ANOVA result from both tutor and peer assessment confirmed that the change in score was significant to justify the assertion that peer assessment improves student academic performance. At [F-statistic value = 226.76405 P-value = 0 for peer assessment, and F-statistic value = 224.43889 P-value = 0], the results indicated significant improvement in student performance.

4.5 Perception of Students towards Peer Assessment

Most learners (more than 92%) felt that self-evaluation in their tasks makes them autonomous. Learners were able to give more thoughts on a concept, and thus more learning is achieved since they can work in a particular way. Peer-evaluation was very useful in assisting them to think more and become analytical. Generally, self-evaluation was regarded as an action that could strengthen learners' skills since the number of learners who considered peer-evaluation as a practice that did not improve their studying experience was less than10% (Table 8). The current finding was per previous results in which students felt they were efficient, attempted their tasks in a more planned way, and were encouraged to think more after the peer-assessment exercises.

Table 4.5.1: Students' Response to peer-evaluation

The self-assessment makes you:

Dependent	8	Independent	60	Neither	32
Do not think more	2	Think more	92	Neither	6
Did not learn anything	8	Learn more	61	Neither	31
Lack of confidence	7	Gain confidence	37	Neither	56
Uncritical	5	Critical	67	Neither	28
Work in an unstructured way	3	Work in a structured way	77	Neither	20
Not analytical	3	Analytical	82	Neither	15

The self-assessment is:

Time consuming	58	Time saving	11	Neither	31
Not enjoyable	47	Enjoyable	19	Neither	34
Hard	26	Easy	32	Neither	42
Not challenging	24	Challenging	45	Neither	31
Not helpful	11	Helpful	58	Neither	31
Not beneficial	13	Beneficial	52	Neither	35

It transpired that 58% of learners thought that having to tender two self-evaluations for the task was time-consuming (Table 8), and this was as per Schunk (2006). Although peer-evaluation was critical in assisting the students in reasoning further and transformed into logical thinkers, approximately 50% of learners experienced the peer-evaluation process was not pleasant (Table 8). This might be due to two peer-assessments designed in the previous research that wasted time. Individual peer-evaluation during the last submission could be very beneficial. It has been acknowledged that time is an essential aspect of implementing self-evaluation or peer-evaluation practice (Orsmond, Merry, & Reiling, 2000). More than 50% of learners felt that self-assessment was practical and helpful, while 45% of them alleged that peer-assessment was challenging (Table

8). Orsmond, Merry, and Reiling (2000) stated that learners found the tasks were more difficult after self-and peer-evaluation.

CHAPTER FIVE

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

5.0 Introduction

The chapter is organized around the study's objectives: use of peer evaluation as a schoolroom evaluation instrument by educators, the effect of peer evaluation on student achievement, and learners' view on peer evaluation. The chapter also provides a conclusion based on the finding of the study as well as the possible.

5.1 Discussion

5.1.1 Use of Peer Evaluation as Classroom Evaluation Instrument Among Educators

The educators' view and action are crucial in cultivating a value of schoolroom evaluation that encourages imparting concepts. Results from this study confirmed that peer assessment was a commonly used classroom tool among teachers. Peer assessment feature typically in monthly assessment strategies for teachers in this research. The outcome of this research is in tandem with most of the discoveries on peer evaluation. Moreover, studies show that teachers in different education levels continue to use peer assessment in the classroom and online platforms as an effective form of evaluation. The value can explain the popularity of peer assessment among secondary school teachers that peer assessment brings to both the teacher and the students.

On the one hand, Topping (2003) found that most teachers are aware that peer assessment motivates students to learn. According to Bolzer et al. (2015), peer assessment allows students to use one another as a resource, enabling them to share ideas and evaluate their opinions compared to others when they provide feedback. DIchy, Segers, & Sluijsmans (1999) found that peer assessment offers enhanced learning, the teaching of abilities to evaluate excellent task concerning provided standards, and can be used by the students to study instrument vigorous participation of the student in the studying process. Most teachers value peer assessment as a vital avenue for evaluation for the studying process because it aggressively encompasses learners in assessing their learning, allowing them to participate in collective review through numerous perspectives.

A crucial outcome of the research showed that while peer grading was the most commonly used type of peer assessment, teachers' peer assessment approach depended on the classroom's nature. Studies have shown that peer evaluation features differ significantly in practice (Double et al.

(2016). Meta-analysis research conducted by Double et al. (2016) found that the four primary types of peer assessment are widely used in classroom settings; however, their use varies based on the lesson. A combination of these approaches features frequently. Explain this observation, Cowie & Harrison (2016) argue that each task is unique, and the type of peer assessment utilized should be based on the context of each classroom.

Consequently, teachers' understanding of the student's interpersonal perception influences their learning from peer assessment. The students are aware of the evaluations, like in group-based peer assessment. They might undergo pressure due to relationships with their peers, resulting in unfair peer evaluation outcomes.

5.1.2 Peer Assessment and Its Impact on Student Academic Performance

The effect of peer evaluation on learners' academic achievement has been extensively explored in contemporary literature. Most of the studies confirm that peer evaluation is having a significant impact on student academic excellence. The results of this research support this line of thought as student performance was found to improve significantly after the experiment. ANOVA test confirmed that the change in performance after the peer assessment process was significant. The international nature of peer assessment can explain these results. According to Panadero (2016), peer assessment is fundamentally an interpersonal process with the capability of generating thought, actions, emotions, and motivational outcomes for both the assessor and the assessee. Based on this view, a possible explanation for the observed results was that peer evaluation permits learners to access the evaluated material decisively, assess the effects with their peers, and recognize mistakes and gaps in their understanding (Topping, 1998). By allowing learners to evaluate their peers, students are more likely to identify patterns, acquire new knowledge, and identify where they have made mistakes in the past. Gielen et al. (2010) found that peer assessment improved communication and learning from feedback.

Moreover, peers may practice the same language and minimize harmful impressions of being assessed by an educator who presents an authority figure (Liu, Lu, Wu, & Tsai, 2016). Nevertheless, the effectiveness of peer evaluation, like an old-style response, is expected to depend on various aspects such as the studying environment, the learner, and the review (Kluger & DeNisi, 1996; Ossenberg, Henderson, & Mitchell, 2018). Some of the features suggested regulating the effectiveness of response include unrecognizability (e.g., Rotsaert, Panadero, & Schellens, 2018;

31

Yu & Liu, 2009), scaffolding (e.g., Panadero & Jonsson, 2013), eminence and planning of the response (Diab, 2011), and explanation.

5.1.3 Perception of Students towards Peer Assessment

The outcomes of this research showed that learners rate peer evaluation positively. This observation can be explained by the ability of peer assessment to motivate and facilitate learning. Studies have found that students are more motivated and interested in the assessed activities than in any other assessment form in assessing peers. In this study, the narrative analysis showed that students were more willing to try it before the move that is being evaluated than in traditional assessment forms. The training was not a factor in deciding whether students would participate in peer assessment activity. This implies that peer assessment has a high chance of motivating students to participate in a learning activity than the traditional evaluation methods. While it was not possible to authoritatively prove that the positive rating of peer assessment was related to peer assessment, observations from the activity led to the conclusion that the more effort that students required to assess activities, the more involved they were and the higher the level of student performance in the activity. This suggested that peer assessment is instrumental as a training procedure.

Narrative analysis from the student reflective journals found that peer assessment was beneficial to both the assessor and the assessee. This finding reflects the conclusions made by other researchers on the effectiveness of peer assessment on a different subject. Gielen, Donchy, and Onghena (2011) established that learners perceive that peer evaluation helped them learn from their inaccuracies. Similar findings were reported previously by Ceston, Levine, & Lane (2008) and Nicol & Macfarlane-Dick (2006). Specifically, Nicol & Macfarlane-Dick (2006) found that favorable ratings for peer assessment changed with the change in the method used for peer assessment. For these researchers, face-to-face feedback between the assessee and the assessor was more effective in motivating them to participate in peer assessment.

5.2 Conclusion

This study sought to determine whether peer assessment was a commonly used classroom assessment tool by secondary school teachers and how it impacted student performance through a case study experiment. Besides, the study sought to understand student perceptions toward peer assessment. The study confirmed that peer assessment was a commonly used classroom

assessment tool among secondary school teachers in Tharaka Nithi County. Peer grading appeared to be the most utilized type of peer assessment; however, it was determined that the subject and class setting influenced peer assessment. These findings mirrored the practical realities of teaching in secondary schools as different lessons may require different approaches to peer assessment. Consequently, the present study provided evidence that peer assessment had a beneficial impact on student performance. Comparing both peer assessment teacher assessment scores for the first and the second test indicated a significant improvement in the second test scores. ANOVA analysis confirmed that the difference in scores was substantial to support the conclusion that peer assessment positively impacted student academic performance. Students had positive attitudes towards peer assessment. The student intimated that peer assessment contributed significantly to learning the subject under consideration, allowed them to learn by themselves, and recommended peer evaluation as an evaluation tool. Narrative analysis of the reflective journals after the experiment confirmed that the students were delighted by the experience of assessing their peers. Based on this study's result, secondary school teachers should apply peer assessment to provide feedback, evaluate learnings, and help them develop a range of behavioral, cognitive, and metacognitive skills.

5.3 Recommendations

a) This study recommends using peer assessment as an authentic classroom assessment method in the subject of biology. Moreover, the study confirmed the value of peer assessment of this subject.

b) The use of a peer evaluation should be associated with a pre-coaching process for learners to comprehend the purpose of the action beyond the mere assessment of peers.

c) While this study's results suggest that PA is a practical approach to assessment, they do not indicate its long-term effect on student performance. As such, future studies should examine the lengthy-term impacts of peer evaluation on academic achievements in a secondary school setting. Such studies should not be limited to biology's subject to broaden the scope of evidence on peer assessment effectiveness as a formative assessment.

REFERENCES

Athanasou, J. A., Di Fabio, A., Elias, M., Ferreira, R., Gitchel, W., Jansen, J., and Mpofu, E. (2012). Complete your thesis or dissertation successfully: Practical guidelines. Juta.

Kombo, D. K. and Tromp, D. L. (2006). Proposal and thesis writing: An introduction. Nairobi: Paulines Publications Africa, 5:8–168.

Topping, K. J. (1998). Peer Assessment between Students in Colleges and Universities. Review of Educational Research, 68(3), 249-276.

Topping, K. J. (2010). Methodological quandaries in studying process and outcomes in peer assessment. Learning and Instruction, 20(4), 339-343.

Vickerman, P. (2009). Student perspectives on formative peer assessment: an attempt to deepen learning? Assessment & Evaluation in Higher Education, 34(2), 221.

van Zundert, M., Sluijsmans, D., & van Merriënboer, J. (2010). Effective peer assessment processes: Research findings and future directions. Learning

Questionnaire

PEER ASSESSMENT QUESTIONNAIRE FOR TEACHERS

This survey is to be applied for a research study on teachers' use of peer assessment in the school. Hence, your opinions are highly valued not only for the study but for the institution as well. The results will be shared after the study. Thank you, a lot, for your cooperation.

PART A. Please complete the following items

Teachers

1. Please indicate the following

Gender

- Male
- Female

2. Years of Experience

- 0 – 5
- 6 – 10
- 11 and above

3. Students per class

- 20 - 29
- 30 - 39
- 40 - 49
- Above 49

4. Hours taught per week

- Below 12
- 13 – 19
- 20 - 29
- Above 30

Part B

5. Do you use peer assessment in your class?

- Yes
- No

6. Peer assessment describes a range of activities in which students evaluate and provide feedback in the work of their peers: which of the following peer assessment approach do you use.

- Formative feedback
- Peer grading
- Peer assessment of group work participation
- Depends on the subject

7. **Please circle one of the numbers that show your agreement or disagreement.**

1= Strongely Disagree

2= Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

Items	1	2	3	4	5
8. can be used as an effective assessment method					
9. has an impact on the students' skills					
10. has an impact on your teaching in the class					
11. enhances students' sense of responsibility					
12. encourages self-learning					

13. **Please circle one of the numbers that show your agreement or disagreement**

1= Never

2= Rarely

3 = Neutral

4 = Often

5 = Very often

Assessment is based on a monthly count

	1	2	3	4	5
How often do you use peer assessment as a class room assessment tool?					
Rate the frequency of use of formative feedback					
Rate the frequency of use of peer grading					
Rate the frequency of use of Peer assessment of group work participation					

This survey is to be applied for a research study on students' perceptions on peer assessment in the class setting. Hence, your opinions are highly valued not only for the study but for the

institution as well. The results will be shared after the study. Thank you a lot for your cooperation.

Students

Please fill in the questions about you below.

Your gender: Male _____ Female _____

Please indicate whether you agree with the statements below by choosing one of the numbers.

	1	2	3	4	5
Peer Assessment contributes to learning the subject under consideration					
Peer assessment allows us to learn by ourselves					
Peer assessment increases collaboration among students					
Objective grades are given while evaluating					
Peer assessment should be used as an assessment method.					

Reflective Journal

Write a brief review reflecting your experience during this experiment.

CONSENT FORM

You are invited to take part in a research study of A Study on The Effects of Peer Assessment on Academic Performance**.** This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Norah Karema Nyaga a Masters Student at The University of Nairobi

Background Information:

The purpose of this study is to:

1. To establish whether Peer assessment is a commonly used classroom assessment tool by teachers.
2. To determine the impact of peer assessment on student academic performance.
3. To determine the perception of peer assessment towards students.

Procedures:

If you agree to be in this study, you will be asked to: you will be required to respond to self-administered questions.

Voluntary Nature of the Study:

This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time.

Risks and Benefits of Being in the Study:

Being in this study would not pose risk to your safety or wellbeing.

Payment:

No payments will be offered to participate in the study

Privacy:

Any information you provide will be kept safely. The researcher will not use your personal information for any purposes outside of this research project. Also, the researcher will not include your name or anything else that could identify you in the study reports.

Contacts and Questions:

You may ask any questions you have now. Or if you have questions later, you may contact the researcher via <norahnyaga@gmail.com>

Statement of Consent:

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below, I understand that I am agreeing to the terms described above.

Name

Date

Signature

APPENDIX 3: NACOSTI APPROVAL

NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 467479

Date of Issue: 09 October 2020

RESEARCH LICENSE

This is to Certify that Ms. Nwakhenma Nyaga of University of Nairobi, has been licensed to conduct research in Tharaka-Nithi on the topic: EFFECTS OF PEER ASSESSMENT ON ACADEMIC PERFORMANCE for the period ending: 09 October 2021.

License No: NACOSI/P/20/8901

467479

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

APPENDIX 4: UNIVERSITY APPROVAL

UNIVERSITY OF NAIROBI
FACULTY OF ARTS
PSYCHOLOGY DEPARTMENT

Telegrams: VarsityNairobi
Telephone: 318262
Fax: 3245566
Telex: 22095 varsity Ke Nairobi

NACOSTI
P. O. BOX 30623-00100
NAIROBI

20TH August 2020

Dear Sir/Madam,

REF: PERMISSION TO CARRYOUT RESEARCH

The student whose name appears below is a fulltime registered student at the University of Nairobi (UON), she/he hopes to collect data and is seeking permission from your office.

Please accord her all the assistance she/he needs.

NORAH KARENA NYAGA –E58/80044/2015

TOPIC: Effects of Peer Assessment on Academic Performance

Sincerely yours

Dr. Karen T. Odhiambo
Lecturer – University of Nairobi
Coordinator- Masters in Education
Measurement and Evaluation

APPENDIX 5: SUMMARY OF S CORES FOR PEER AND TEACHER ASSESSMENT IN TEST 1 AND 2

Peer Assessment		Teacher Assessment	
Test 1	Test 2	Test 1	Test 2
12	18	12	17
12	17	14	15
13	16	12	17
14	18	10	18
10	18	10	18
14	17	11	19
12	17	13	18
10	16	12	20
13	16	14	17
9	18	10	16
10	15	11	14
11	18	12	19
11	19	10	20
14	19	10	18
12	18	12	17
10	17	10	16
12	17	14	15
13	16	12	17
14	18	10	18
10	18	10	18
14	17	11	19
12	17	13	18
10	16	12	20
13	16	14	17
9	18	10	16

10	15	11	14
11	18	12	19
11	19	10	20
14	19	10	18
12	17	12	17
10	16	10	16

APPENDIX 6: SAMPLE OF TA COPY

RAKA BOYS HIGH SCHOOL

THREE

OGLY QUIZ

AL CLASIFFICATION

RUCTIONS

er all questions in the spaces provided

t write your name

State five characteristics of members of kingdom Animalia (5 mks)

They move from Place to place

They grow

. They erect

They die

. They give rise to new generation

Consider the characteristics of the following organisms bee, tick, robters,coacroach,millipede,moth and mosquito

Name the phylum to which they belong (1mk)
Kingdom animalia

ii. State four characteristics of members of the phylum you identified in (a) above (4 mks)

1. Some of them fly
2. Some have no backbone
3 They grow.
4. Some are harmful

Give the four classes represented by the animals named above and atleast place one example in each case (8mks)

. inseets - bee

. fish - robters

State two economic importances of members of class insecta (2mks)

. They are a source of food

. They help in making manure

44

...RAKA BOYS HIGH SCHOOL

...1 THREE

...OGLY QUIZ

...IAL CLASIFFICATION

...RUCTIONS

...er all questions in the spaces provided

...t write your name

State five characteristics of members of kingdom Animalia (5 mks)

They move from place to place ✓
They grow
They erect
They die
They give rise to new generations ✓

Consider the characteristics of the following organisms bee, tick, robters,coacroach,millipede,moth and mosquito

Name the phylum to which they belong (1mk)
Kingdom animalia

ii. State four characteristics of members of the phylum you identified in (a) above (4 mks)

1. Some of them fly
2. Some have no backbone ✓
3. They grow.
4. Some are harmful

Give the four classes represented by the animals named above and atleast place one example in each case (8mks)

- insects - bee
- fish - robbers

State two economic importances of members of class insecta (2mks)

. They are a source of food ✓
. They help in making manure ✓

APPENDIX 8: PLAGIARISM

EFFECTS OF PEER ASSESSMENT ON ACADEMIC PERFORMANCE CASE STUDY: THARAKA BOYS SCHOOL

ORIGINALITY REPORT

8%	8%	3%	4%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.tandfonline.com Internet Source	1%
2	mafiadoc.com Internet Source	1%
3	link.springer.com Internet Source	1%
4	scholarworks.waldenu.edu Internet Source	1%
5	Submitted to Laureate Higher Education Group Student Paper	1%
6	erepository.uonbi.ac.ke:8080 Internet Source	1%
7	Submitted to Walden University Student Paper	<1%
8	erepository.uonbi.ac.ke Internet Source	<1%
9	pdfs.semanticscholar.org	